LISTING OF CLAIMS

1.-15. (Cancelled)

16. (Currently Amended) A method for detecting fluorescence ~~detection of~~ from a sample in a channel plate comprising:

providing ~~a channel through which the sample is able to flow, the channel having an axis;~~

~~directing~~ an excitation beam of light into the sample ~~at an angle with respect to the axis of~~ and the channel plate, wherein the excitation beam of light produces ~~;~~

~~generating~~ a fluorescence image ~~of~~ from the sample and a fluorescence image ~~associated with the background~~ from the channel plate; ~~,~~

positioning the excitation beam of light to increase the spatial resolution between the fluorescence image of the sample ~~being generated in a direction displaced from that of~~ and the fluorescence image ~~associated with the background~~ of the channel plate;

collecting the fluorescence image of the sample on a detector. ~~with a collection optics system, wherein the collection optics system collimates the fluorescence and refocuses the fluorescence onto a charged coupled device.~~

17.-29. (Cancelled)

30. (Currently Amended) The method as defined in Claim ~~29~~ 16, wherein the detector is selected from the group consisting of charge coupled devices, CMOS detectors, photodiode, photodiode array, photomultiplier tubes, and photomultiplier tube arrays.

31. (Currently Amended) The method as defined in Claim ~~29~~ 16, wherein the excitation beam of light is positioned at an angle less than or equal to about 20° relative to a channel axis of the channel plate.

32. (Currently Amended) The method as defined in Claim ~~29~~ 16, wherein a collection optics system collimates the fluorescence ~~t trail~~ image from the sample and the fluorescent image of the channel plate and refocuses the ~~second portion~~ the fluorescence image from the sample onto the detector.

33. (Previously Presented) The method as defined in Claim 32, wherein the collection optics further removes scattered light from the excitation beam using a long pass filter.

34. (Previously Presented) The method as defined in Claim 32, wherein the collection optics further removes scattered light from the excitation beam using a band pass filter.

35. (Currently Amended) The method as defined in Claim ~~29~~ 16, wherein positioning comprises directing the excitation beam of light substantially parallel to the channel plate into a reflective mirror, which reflects the excitation beam of light into the sample.

36. (Previously Presented) The method as defined in Claim 35, wherein reflecting further comprises directing the excitation beam of light from the reflective mirror through a prism.

37. (Currently Amended) An apparatus for detecting fluorescence from a sample in a channel plate comprising:

a light source operable to generate an excitation beam of light, wherein the excitation beam of light produces a fluorescence image from the sample and a ~~t trail, wherein the~~ fluorescence image ~~t trail comprises a first portion~~ from the channel plate ~~and a second portion from the sample~~;

a mirror operable to position ~~said~~ the excitation beam of light into the sample, increasing the spatial resolution between the fluorescence image from the sample and the fluorescence image from the channel plate ~~first portion and the second portion~~; and

a detector operable to image the fluorescence image from the sample~~second portion~~.

38. (Previously Presented) The apparatus as defined in Claim 37, wherein the detector is selected from the group consisting of charge coupled devices, CMOS detectors, photodiode, photodiode array, photomultiplier tubes, and photomultiplier tube arrays.

39. (Previously Presented) The apparatus as defined in Claim 37, further comprising collection optics, wherein the collection optics comprises a long pass filter operable to remove scattered light at a wavelength of said excitation beam of light.

40. (Previously Presented) The apparatus as defined in Claim 37, further comprising collection optics, wherein the collection optics comprises a transmission defraction grating operable to separate light into differing wavelengths.

41. (Previously Presented) The apparatus as defined in Claim 37, further comprising a prism operable to direct the excitation beam of light toward the sample.

42. (Previously Presented) The apparatus as defined in Claim 37, wherein the light source is a laser.

43. (Currently Amended) A method for detecting fluorescence from a sample in a channel plate comprising:

providing an excitation beam of light to the sample and the channel plate, wherein the excitation beam of light produces a fluorescence image from the sample and a ~~t trail, wherein the~~ fluorescence image ~~t trail comprises a first portion~~ from the channel plate ~~and a second portion from the sample~~;

positioning the excitation beam of light to increase the spatial resolution between the ~~first portion and the second portion~~ fluorescece image from the sample and the fluorescence image from the channel plate; and

collecting the fluorescece image from the sample ~~second portion~~ and substantially smaller amounts of the fluorescence image from the channel plate ~~first portion~~ on a detector.

44. (Currently Amended) The method as defined in Claim 43, wherein the excitation beam is positioned at an angle less than or equal to about 20° relative to a channel axis of the channel plate.

45. (Previously Presented) The method as defined in Claim 43, wherein providing an excitation beam of light comprises providing a laser to generate the excitation beam of light.

46. (Previously Presented) The method as defined in Claim 43, wherein positioning comprises directing the excitation beam of light substantially parallel to the channel plate into a reflective mirror, which reflects the excitation beam of light into the sample.

47. (Previously Presented) The method as defined in Claim 46, wherein reflecting further comprises directing the excitation beam of light from the reflective mirror through a prism.

48. (Currently Amended) A method for detecting fluorescence from a sample in a channel plate comprising:

providing an excitation beam of light to the sample and the channel plate, wherein the excitation beam of light produces a fluorescence image from the sample and a ~~t trail, wherein the~~ fluorescence image ~~t trail comprises a first portion~~ from the channel plate ~~and a second portion from the sample~~;

positioning the excitation beam of light to increase the spatial resolution between the ~~first portion and the second portion~~ fluorescece image from the sample and the fluorescence image from the channel plate; and

collecting the fluorescece image from the sample ~~first portion~~ and the fluorescence image from the channel plate ~~second portion~~ on spatially different sections of a detector.

49. (Currently Amended) The method as defined in Claim 48, wherein the excitation beam is positioned at an angle less than or equal to about 20° relative to a channel axis of the channel plate.

50. (Previously Presented) The method as defined in Claim 48, further comprising:

providing a light source operable to generate the excitation beam of light; and

providing a mirror operable to position the excitation beam of light.

51. (Currently Amended) An apparatus for detecting fluorescence from a sample in a channel plate comprising:

a light source operable to generate an excitation beam of light, wherein the excitation beam of light produces a fluorescence image from the sample and a ~~t trail, wherein the~~ fluorescence image ~~t trail comprises a first portion~~ from the channel plate ~~and a second portion from the sample~~;

a mirror operable to position said excitation beam of light into the sample, increasing the spatial resolution between the ~~first portion and the second portion~~ fluorescece image from the sample and the fluorescence image from the channel plate;

collection optics to collimate and focus the fluorescece image from the sample and the fluorescence image from the channel plate ~~fluorescent trail~~; and

a detector operable to image the fluorescece image from the sample ~~second portion~~.

52. (Currently Amended) The apparatus according to Claim 51, wherein the collection optics are oriented about 90 degrees with respect to a channel axis of the channel plate.